

* * *

COMMUNICATION RESULT REPORT (MAR. 29. 05 2:38PM

FAX HEADER: BARNES & THORNBURG

TRANSMITTED/STORED : MAR. 29. 2005 2:35PM
FILE MODE OPTION

ADDRESS

10/550427
IC20 Rec'd PET/PTO RESULT SEP 2009

992 MEMORY TX

01141227401435

OK

6/6

REASON FOR ERROR
E-1) HANG UP OR LINE FAIL
E-3) NO ANSWER

E-2) BUSY
E-4) NO FACSIMILE CONNECTION

BARNES & THORNBURG LLP
btlaw.com

Suite 4400
One North Wacker Drive
Chicago, Illinois 60606-2809
(312) 357-1313

Fax Number: (312) 759-5646

FAX COVER SHEET

TO: NAME
International Bureau of
WIPO

COMPANY NAME

TELECOPY NO.
011 +41 22 740 14 35

FROM: James B. Conte
DIRECT DIAL: 1-312-357-1313
DATE: March 29, 2005

E-MAIL:
TIME SENDING:

NUMBER OF PAGES (INCLUDING THIS COVER SHEET): 6

If you have difficulty receiving this Fax, please call Barnes & Thornburg at (IKON) 312-214-8823 and ask for _____

Response once received: Please deliver immediately.

CLIENT# 3220
MATTER# 74751

☒ Original to follow by mail
☐ Original will not follow by mail

CONFIDENTIALITY NOTICE: This message is for the exclusive use of the individual or entity to which it is addressed and is confidential. If you are not the addressee or an employee, or agent of the addressee responsible for delivering it to the addressee, please do not read, use, disclose, copy or distribute this message and do not take any action in reliance upon it. If you have received this message in error, please notify us immediately by telephone (collect) to arrange for its return. We do not intend to waive any attorney-client or work product privilege by the transmission of this message.

Chicago Elkhart Fort Wayne Grand Rapids Indianapolis South Bend Washington, D.C.

BARNES & THORNBURG LLP
btlaw.com

10/550427
JC20 Rec'd PATTS 21 SEP 2005
Suite 4400
One North Wacker Drive
Chicago, Illinois 60606-2809
(312) 357-1313

Fax Number: (312) 759-5646

FAX COVER SHEET

TO: **NAME**
International Bureau of
WIPO

COMPANY NAME

TELECOPY NO.
011 +41 22 740 14 35

FROM: James B. Conte

DIRECT DIAL: 1-312-357-1313

E-MAIL:

DATE: March 29, 2005

TIME SENDING: _____

NUMBER OF PAGES (INCLUDING THIS COVER SHEET): 6

If you have difficulty receiving this Fax, please call Barnes & Thornburg at (IKON) 312-214-8823 and ask for _____

Response once received: Please deliver immediately.

CLIENT# 3220
MATTER# 74751

- ☒ Original to follow by mail
☐ Original will not follow by mail

CONFIDENTIALITY NOTICE: This message is for the exclusive use of the individual or entity to which it is addressed and is confidential. If you are not the addressee or an employee or agent of the addressee responsible for delivering it to the addressee, please do not read, use, disclose, copy or distribute this message and do not take any action in reliance upon it. If you have received this message in error, please notify us immediately by telephone (collect) to arrange for its return. We do not intend to waive any attorney-client or work product privilege by the transmission of this message.

Chicago Elkhart Fort Wayne Grand Rapids Indianapolis South Bend Washington, D.C.

10/550427

JC20 Rec'd PCT/PTO 21 SEP 2005

BARNES & THORNBURG

P.O. Box 2786
Chicago, Illinois 60690-
2786
(312) 357-1313
(312) 759-5646 Fax

BEFORE THE INTERNATIONAL BUREAU OF WIPO

Int'l. Application No.: PCT/US2004/009104

Int'l. Filing Date: 26 March 2004

Applicant: Purdue Research Foundation

Title: *NANOFIBERS AS A NEURAL
BIOMATERIAL*

Inventors: Webster & McKenzie

Attorney/Docket No. 3220-74751

Authorized Officer: Virginia Irby

Certificate Under 37 CFR 1.8(a)

I hereby certify that this correspondence is being
delivered via facsimile to the International Bureau of
WIPO at 011 +41 22 740 14 35.

on March 29, 2005

Maria Opon
Maria Opon

ARTICLE 19 AMENDMENT

Madam:

In response to the International Search Report mailed January 27, 2005 and pursuant to Article 14, Applicant hereby encloses substitute claims 1-21. The application was published under A2 without the search report. The application has not yet been republished with the search report. The present communication is the letter required under the Rules to accompany the substitute claims.

Where originally there were 22 claims and the present amendments consist of cancelling some claims and amending some claims:

Claim 3 has been cancelled.

Claims 1 and 2 have been replaced by amended Claims 1 and 2. Original Claims 4-18

10/550427

IC20 Rec'd PCT/PTO 21 SEP 2005

Int'l. Appl. No. PCT/US2004/009104

Attorney Docket No. 3220-74751

- 2 -

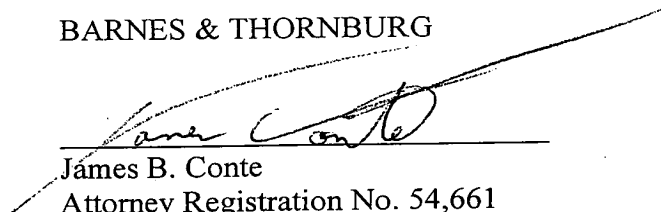
were renumbered, but otherwise left unchanged, to read 3-17. Claims 20-22 were renumbered, but otherwise unchanged, to read 19-21. Original Claim 19 was amended and renumbered as Claim 18. No other changes to the claims have been made.

Respectfully submitted,

BARNES & THORNBURG

03 / 29 / 05

Date


James B. Conte

Attorney Registration No. 54,661

BARNES & THORNBURG
P.O. Box 2786
Chicago, Illinois 60690-2786

JC20 Rec'd PCT/PTO 21 SEP 2009

WE CLAIM:

- [C1]** A neural implant comprising a device coated with a carbon nanofiber material.
- [C2]** A neural implant comprising a device, wherein at least one component of the device is made of a carbon nanofiber material.
- [C3]** The neural implant of claim 3, wherein the carbon nanofibers are about 2 to 200 nm in width.
- [C4]** The neural implant of claim 4, wherein the carbon nanofibers comprise carbon nanotubes.
- [C5]** The neural implant of claim 5, wherein the carbon nanotubes are functionalized.
- [C6]** The neural implant of claim 5, wherein the carbon nanotubes are aligned.
- [C7]** The neural implant of claim 1, wherein the implant is a neural probe.
- [C8]** The neural implant of claim 2, wherein the nanomaterial comprises a matrix selected from the group consisting of polyurethane, polymethacrylate, polyester, polyvinyl and any copolymers thereof.
- [C9]** The neural implant of claim 2, wherein the implant is a neural probe.
- [C10]** A neural prostheses comprising an implantable device with a composite polyurethane carbon nanotube, the device capable of stimulating neuronal growth and minimizing glial scar tissue formation.
- [C11]** The neural prostheses of claim 11, wherein the carbon nanotube comprises 2% to 100% of the composite.
- [C12]** The neural prostheses of claim 11, wherein the carbon nanotube forms a carbon nanofiber.
- [C13]** The neural prostheses of claim 13, wherein the carbon nanofiber is about 100 nm.
- [C14]** Use of a neural implant that minimizes scar formation comprising:
 - (a) obtaining a neural implantable device;
 - (b) coating the implantable device with a nanomaterial; and
 - (c) securing the implantable device in the neural tissue.
- [C15]** Use of a neural implant that minimizes scar formation comprising:
 - (a) obtaining a neural implantable device comprising a nanomaterial; and
 - (b) securing the implantable device in the neural tissue.

- [C16]** A method of stimulating neuronal growth and minimizing scar formation by an implant in a brain, the method comprising:
- (a) obtaining a neural implantable device comprising a nanomaterial;
 - (b) securing the implantable device in the brain; and
 - (c) providing neuronal stimulants through the device.
- [C17]** An orthopedic prostheses comprising an implantable device coated with a composite polyurethane carbon nanotube, the device capable of stimulating osteoblast proliferation and minimizing fibroblast encapsulation.
- [C18]** A method of stimulating osteoblast proliferation and minimizing fibroblast encapsulation by an orthopedic implant, the method comprising:
- (a) obtaining an orthopedic implantable device comprising a carbon nanofiber material; and
 - (b) securing the implantable device.
- [C19]** A method of selecting a nanomaterial suitable for implant, the method comprising:
- (a) determining structural dimensions of a biological molecule in a biological tissue; and
 - (b) fabricating the nanomaterial whose surface structural dimension is similar to the biological molecule.
- [C20]** A method of claim 20, wherein the nanomaterial comprises carbon nanofibers of about 2-200 nm in width.
- [C21]** A method of claim 20, wherein the biological molecule is laminin.

ABSTRACT

[00092] Nanomaterials for neural and orthopedic prostheses are disclosed. Composite carbon nanofibers enhance neuronal growth and minimize glial scar tissue formation. Methods and compositions to promote neuronal growth and minimize scar tissue formation during prolonged monitoring and treatment of neural tissue are disclosed. Composite polyurethane carbon nanofiber is a suitable material for neural implant. Composite carbon nanomaterials decrease adhesion of astrocytes and fibroblasts.